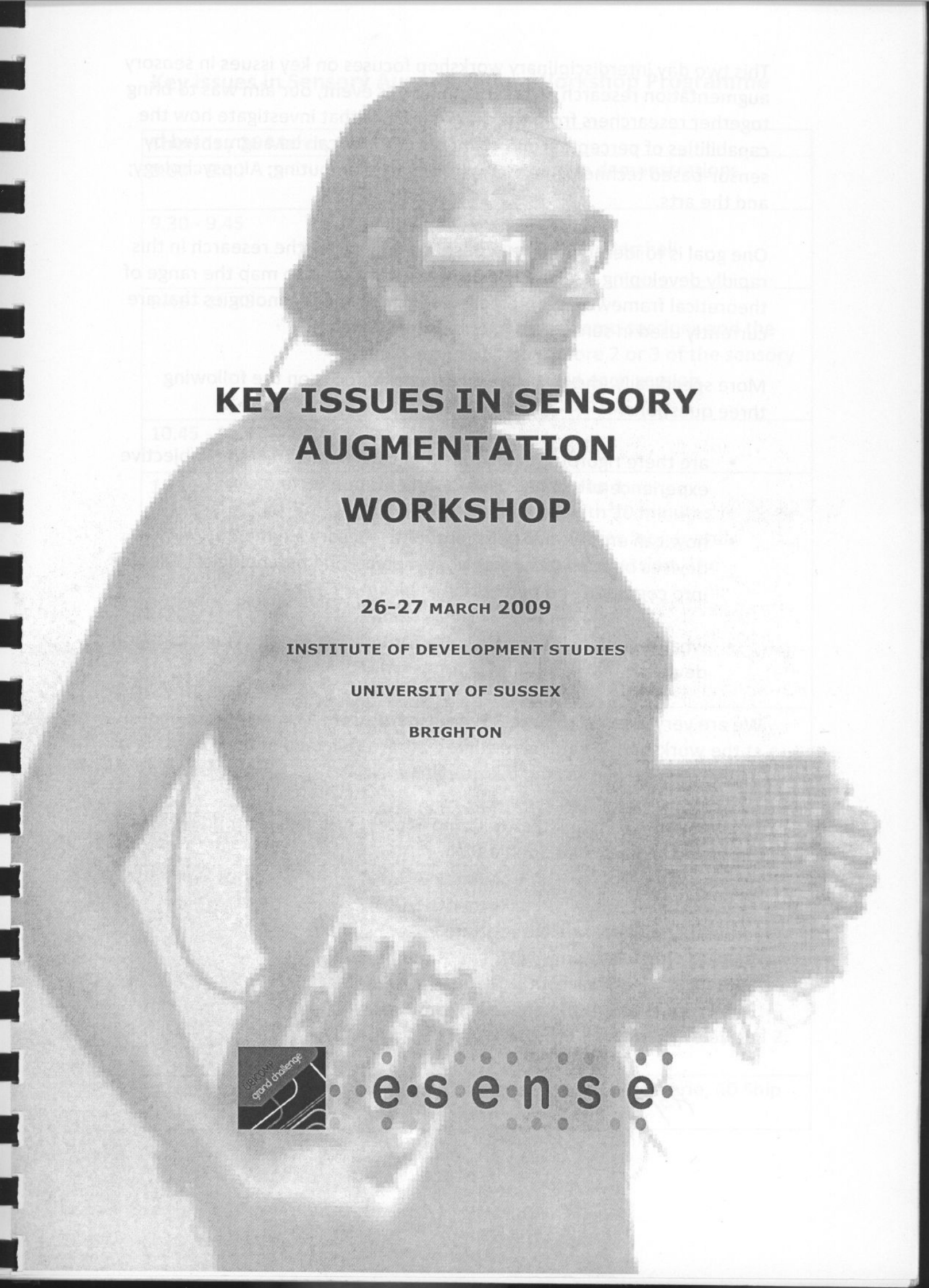

KEY ISSUES IN SENSORY AUGMENTATION

WORKSHOP

26-27 MARCH 2009

INSTITUTE OF DEVELOPMENT STUDIES

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Position Papers

Marco Ajovalasit, School of Engineering and Design Brunel University, UK
How can Vibro-Tactile Sensations be Presented to Various Body Areas in Order to Enhance Sensory Information in Everyday Products?

Malika Auvray, CNRS, France
Replacing One Sense by Another: Sensory Substitution and the Classification of our Sensory Modalities

Jon Bird, Paul Marshall and Yvonne Rogers, Pervasive Interactive Lab, Open University, UK
Sensory Augmentation in the E-Sense Project

Nick Bryan-Kinns, Queen Mary, University of London, UK
Sensory Threads - Collective Sensory Augmentation

Ron Chrisley, University of Sussex, UK
Sensory Augmentation, Synthetic Phenomenology and Interactive Empiricism: A Position Statement

Andy Clark, University of Edinburgh, UK
Celebratory Self Re-Engineering

Thi Bich Doan, Université Panthéon Sorbonne, France
Using Second Person Interview Techniques

Joerg Fingerhut, Institute of Philosophy/Institute for Advanced Studies of Picture Act and Embodiment, Humboldt University Berlin, Germany
The Explanatory Value of the Active Body for Perceptual Consciousness

Tom Froese, Centre for Research in Cognitive Science (COGS), University of Sussex, UK
Exploring Mind-As-It-Could-Be: From Artificial Life to Artificial Embodiment

Joseph A. Giacomin, School of Engineering and Design Brunel University, UK
Perception Enhancement Systems: Technologies for Making the World More Intuitive

Sue Hawksley, Edinburgh College of Art, UK
Dancing at the Interface

Simon Holland, Department of Computing, Open University, UK
Sensory Augmentation for Abstract, Conceptual Relationships: Whole Body Interaction and Musical Harmony

Dorothy Kwek, Johns Hopkins University, US
Sensory Augmentation Workshop Position Paper

Charles Lenay, Perceptual Supplementation Group, Compiègne, France
Investigating the Subjective Experience of Using Sensory Augmentation Devices. Scientific Studies of Cognitive Technologies

Janet van der Linden, Computing Department, Open University, UK
Practise Without Stickers - Feedback in Games for Novice Violinists

Christof van Nimwegen, Centre for User Experience Research, Faculty of Social Sciences, K. U. Leuven/IBBT and Alex J. Uyttendaele, Department of Industrial Design User-Centred Engineering Group, Eindhoven University of Technology, Holland
Unobtrusive Physiological Measures to Adapt System Behavior: The GSR Mouse

Helena De Preester, Faculty of Fine Arts, University College Ghent and Department of Philosophy and Moral Science, Ghent University, Belgium
Sensory Augmentation: Extending the Body or Incorporation into the Body?

Sara Price and Jennifer Sheridan, London Knowledge Lab, Institute of Education, UK
Using Sensory Augmentation to Investigate the Role of Action in Cognition

Carson Reynolds, University of Tokyo, Japan
I am Near my Navel: Learning Mappings between Location and Skin

Ian Saunders, University of Edinburgh, UK
A Closed-Loop Prosthetic Hand

Frank Schumann, University of Osnabrück, Germany
feelSpace

Adam Spiers, University of Bristol, UK
What Technologies are Available for Building Sensory Augmentation Systems?

Pierre Steiner, Université de Technologie de Compiègne, France
Enacting the Experience of Space through Perceptual Supplementation Devices: Beyond the Internalism/Externalism Debate

Jakob Tholander, Mobile Life, Swedish Institute of Computer Science, Stokholm University, Sweden
Experiencing and Interpreting Bio-Data Sensors through a Mobile Phone

Jamie Ward, University of Sussex, UK
Seeing Sounds? Explorations with the "vOICe" Visual-to-Auditory Substitution System

Alex Watterson, CMIS, Brighton University, UK
Position Paper for Key Issues in Sensory Augmentation Workshop

Danielle Wilde, Faculty of Art and Design, Monash University and CSIRO Materials Science and Engineering, Australia
Swing That Thing...Cross-pollinating Art, Design and Science to Develop and Evaluate Sensory Augmentation and Body Memory Technology

Sensory augmentation: extending the body or incorporation into the body?

Helena De Preester

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My most recent research was on artificial extensions of human embodiment, and the distinction between extension and incorporation. Some of my recent work investigates the role of a pre-existing body-model that is an enabling constraint for the incorporation of objects into the body. This body-model is also a basis for the distinction between body extensions (e.g., in the case of tool-use) and incorporation (e.g., in the case of successful prosthesis use). It is argued that, in the case of incorporation, changes in the sense of body-ownership involve a reorganization of the body-model, whereas extension of the body with tools does not involve changes in the sense of body-ownership (De Preester & Tsakiris, in press, 'Body-extension versus body-incorporation: is there a need for a body-model?', *Phenomenology and the cognitive sciences*; De Preester, The bodily origins of technics: Heidegger, cognitive science and the prosthetic subject, to appear in *Heidegger and Cognitive Science* eds. Kiverstein & Wheeler, MacMillan).

In the course of the above research, I had to constrain myself to motor extensions of the body, i.e. to the replacement of lacking limbs or parts thereof, and to extensions of effectors of the body. The major reason was that the involvement of *sensory* extensions, augmentations or improvements of the body seem to imply a different 'logic', i.e. a different kind or reorganisation, of the feeling of embodiment. Nonetheless, the idea that the status of the apparatuses used for sensory augmentation is still unclear, and remains suspended between considering them as <u>part of</u> the sensory body or as <u>extension</u> of the sensory-motor body, not only holds in the context of tools and prostheses, but also in the context of sensory augmentation.

The workshop on sensory augmentation can offer the occasion to think further about a possible distinction between extension and/or incorporation for sensory prostheses, and not only for replacement parts for limbs or parts of limbs. In the case of sensory prostheses, we may go further than replacements (e.g. one modality for another), and arrive at truly new extensions of our sensory embodiment, i.e. not constrained by a pre-existing body-model.